

WHAT IS CLAIMED IS:

1. An optical sheet to be used as a screen on which an image is projected from an image projector, comprising:

optical sheet members which are substantially identical, and whose optical properties over a major surface vary cyclically along a first direction and are substantially the same along a second direction orthogonal to the first direction, wherein a region where said optical properties are substantially the same has an undulated portion along the second direction,

wherein: said optical sheet is produced by joining the plurality of optical sheet members with end surfaces thereof, which are substantially perpendicular to the major surfaces thereof, met each other as joint surfaces; and one optical sheet member and the other optical sheet member to be joined with the joint surfaces thereof met each other have the undulations of which phases are synchronized each other so that the optical properties of the joint surfaces will be substantially identical to each other within a predetermined permissible range.

2. The optical sheet according to Claim 1, wherein the cyclically varying optical property is attained by making the surface of an optical sheet member, which contains the

major surface thereof, cyclically concavo-convex in the direction of the height of the optical sheet member perpendicular to the major surface.

3. The optical sheet according to Claim 1, wherein the magnitude of undulations corresponds to 2 pitches or less on the assumption that the basic cycle of the variation of the optical property of an optical sheet member in the first direction corresponds to 1 pitch.

4. The optical sheet according to Claim 1, wherein: a plurality of optical sheet members are joined with a transparent adhesive sandwiched between the joint surfaces thereof; and assuming that the basic cycle of the variation of the optical properties of the optical sheet members in the first direction corresponds to 1 pitch, the transparent adhesive is applied to the surfaces of the optical sheet members, which contain the major surfaces thereof, over a width corresponding to a range from 1 pitch to 5 pitches across the joint surfaces, and then hardened.

5. The optical sheet according to Claim 1, wherein: the roughness of the joint surfaces of the optical sheet members is  $R_{\max} 0.8 S$  or less; the plurality of optical sheet members are joined with a transparent adhesive

sandwiched between the joint surfaces thereof; and the adhesive is hardened.

6. The optical sheet according to Claim 1, wherein the predetermined permissible range within which the optical properties of the joint surfaces are regarded to be substantially identical to each other signifies that a difference between the optical properties falls within 50 % of the cyclic variation of the optical properties.

7. The optical sheet according to Claim 2, wherein the predetermined permissible range within which the optical properties of the joint surfaces are regarded to be substantially identical to each other signifies that a magnitude of a mismatch in the direction of the heights of the joint surfaces between the surfaces of the optical sheet members falls within 50 % of the amplitude of the cyclic concave-convex.

8. The optical sheet according to Claim 1, wherein the phases of undulations are synchronized in order to make the optical properties substantially identical to each other within the predetermined permissible range by pairing optical sheet members that have undulations extended in substantially the same direction relative to the joint

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surfaces thereof.

9. The optical sheet according to Claim 1, wherein the undulations are phased in order to make the optical properties of optical sheet members substantially identical to each other within the predetermined permissible range by pairing optical sheet members that have undulations extended in substantially symmetrical directions relative to the joint surfaces thereof.

10. An optical sheet manufacturing system comprising:  
an optical sheet cutting machine for cutting an optical sheet member optimally for joining;

an optical sheet joining machine for joining optical sheet members, which have been cut, with edges thereof optimal for joining met each other;

a reservoir in which at least one of an optical sheet member cut by said optical sheet cutting machine and an optical sheet produced by said optical sheet joining machine is stored;

a conveying machine for conveying an optical sheet member among said optical sheet cutting machine, optical sheet joining machine, and reservoir; and

a controller for controlling said optical sheet cutting machine, reservoir, optical sheet joining machine, and

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conveying machine.

11. An optical sheet cutting machine comprising:

a platform on which an optical sheet member to be cut is placed and which enables adjustment of a slide position and a turn position on the major surface of an optical sheet member placed;

an investigating device for investigating the condition of the surface of the optical sheet member placed on said platform so as to determine a cutting line;

a cutting blade with which the optical sheet member is cut;

a cutting drive source for driving said cutting blade at the same cut position; and

a feeding drive source for moving said cutting blade to change the cutting start position at which cutting the optical sheet member is started with said cutting blade,

wherein: a slide position and a turn position for an optical sheet member is adjusted using said platform so that a path along which said cutting blade is moved by said feeding drive source will be aligned with the cutting band line determined based on investigation performed by said investigating device; and

said cutting blade is driven using said cutting drive source and moved along said cutting band line using said

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feeding drive source in order to trim an optical sheet member.

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